

GANTRY POSITIONING APPARATUS FOR X-RAY IMAGING

ABSTRACT OF THE DISCLOSURE

5 A robotically controlled five degree-of-freedom x-ray gantry positioning apparatus, which is connected to a mobile cart, ceiling, floor, wall, or patient table, is being disclosed. The positioning system can be attached to a cantilevered o-shaped or c-shaped gantry. The positioning system can precisely translate the attached gantry in the three orthogonal axes X-Y-Z and orient the gantry about the X-axis and Y-axis
10 while keeping the center of the gantry fixed, (see Figure 1). The positioning apparatus provides both iso-centric and non iso-centric "Tilt" and "Wag" rotations of the gantry around the X-axis and Y-axis respectively. The iso-centric "Wag" rotation is a multi-axis combination of two translations and one rotation. Additionally, a field of view larger than that provided by the detector is provided in pure AP (anterior/posterior) and
15 lateral detector positions through additional combinations of multi-axis coordinated motion. Each axis can be manually controlled or motorized with position feedback to allow storage of gantry transformations. Motorized axes enable the gantry to quickly and accurately return to preset gantry positions and orientations.

 A system and method for enlarging the field of view of the object being imaged
20 combines a rotation of the x-ray source and detector with a multi-axis translation of the gantry.